This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented): A controller for a heating device for controllably applying power to a heating device and controlling the heating device temperature by varying the duty cycle characteristics of a periodic control signal, comprising:

an oscillator circuit operable to output a frequency signal;

a counter connected to the oscillator circuit operable to count oscillations of the frequency signal and output a periodic control signal based on said frequency signal;

a power supply circuit including a switch to thereby energize and de-energize said heating device;

an actuating circuit controlling said switch, said actuating circuit controlled by said periodic control signal, wherein said actuating circuit is operable to control said switch to energize said heating device during a portion of said periodic control signal; and

a user controlled temperature adjustment circuit connected to the oscillator circuit, including means for varying the frequency of said frequency signal, whereby said periodic control signal is varied to thereby vary the heating device temperature, wherein said means for varying the frequency includes means for varying an impedance included in said oscillator circuit.

2. (previously presented): A controller for a heating device for controllably applying power to a heating device and controlling the heating device temperature by varying the duty cycle characteristics of a periodic control signal, comprising:

an oscillator circuit operable to output a frequency signal;

a counter connected to the oscillator circuit operable to count oscillations of the frequency signal and output a periodic control signal based on said frequency signal, said periodic control signal including an on time signal portion and an off time signal portion;

a power supply circuit including a switch operable to energize and de-energize said heating device;

an actuating circuit controlling said switch, said actuating circuit controlled by said periodic control signal, wherein said actuating circuit is operable to control said switch to energize said heating device during said on-time signal portion and de-energize said heating device during said off-time signal portion;

a user controlled temperature adjustment circuit connected to the oscillator circuit, including means for adjusting the oscillator circuit to thereby vary the frequency of said frequency signal, whereby said on time signal portion

and said off time signal portion are varied to thereby vary the heating device temperature; and

a plurality of LEDS connected to said user controlled temperature adjustment circuit wherein said LEDS provide a means for selecting available heating modes of said controller, such that said controller provides for at least one heat mode by detecting the presence of at least one of said plurality of LEDS, and deactivates a heat mode in response to the absence of said at least one of said plurality of LEDS.

3. (previously presented): A heating device temperature control apparatus for controlling the temperature of a heating device by applying electric power from a first power source to the heating device, comprising:

a first switch connected between the first power source and the heating device for switchably applying power to the heating device;

an oscillator circuit;

a second switch connected between a second power source and the oscillator circuit;

a counter connected to the oscillator circuit operable to count oscillations thereof and output an oscillation count value;

a control circuit connected to the counter and said first and second switches, said control circuit operable to control the first switch to thereby

switchably connect the first power source to the heating device when the oscillation count value of the counter is below a predetermined count value and to disconnect the power source from the heating device when the oscillation count value reaches the predetermined count value;

said control circuit operable to control the second switch to thereby switchably connect the second power source to the oscillator circuit when a voltage associated with the oscillator circuit is below a predetermined voltage value and to disconnect the second power source from the oscillator circuit when the voltage reaches the predetermined voltage value, and to switchably reconnect the second power source to the oscillator circuit when the voltage reaches a second predetermined voltage value; and

a user controlled temperature adjustment circuit connected to the oscillator circuit, including means for adjusting the oscillator circuit to vary a frequency of oscillation therein, thereby varying a time interval during which the oscillation count value of the counter is below the predetermined count value and in which the control circuit instructs the switch to connect the first power source to the heating device, wherein said means for adjusting the oscillator circuit includes means for varying an impedance included in said oscillator circuit.

4. (previously presented): A heating device temperature control apparatus according to claim 3, further comprising:

a rapid heating control circuit operable to control the first switch to connect the power source to the heating device for a predetermined time period upon activation of the controller by said user controlled temperature adjustment circuit to thereby rapidly increase the temperature of said heating device, whereby said user controlled temperature adjustment circuit selects at least one of a plurality of selectable impedances to thereby provide a lower frequency of oscillation output by said oscillator circuit and an increased time interval during which the oscillation count value of the counter is below the predetermined count value, and when said oscillation count value reaches the predetermined count value the control circuit instructs the first switch to continue to connect the first power source to the heating device and the temperature adjustment circuit de-selects said at least one of said plurality of selectable impedances and selects a second of said plurality of selectable impedances used to implement the selected heating mode, wherein said second of said plurality of selectable impedances provides a higher frequency of oscillation output by said oscillator circuit than said first.

5. (previously presented): A heating device temperature control apparatus according to claim 3, further comprising:

a plurality of LEDS connected to said user controlled temperature adjustment circuit wherein said LEDS provide a means for selecting available heating modes of said controller, such that said controller provides for at least

one heat mode by detecting the presence of at least one of said plurality of LEDS, and deactivates a heat mode in response to the absence of said at least one of said plurality of LEDS.

6. (previously presented): A heating device temperature control apparatus according to claim 5, further comprising:

a second control circuit connected to said user controlled temperature adjustment circuit, constructed to output a second control signal indicative of whether an LED is connected to said user controlled temperature adjustment circuit for each of said heat modes; and

a monitoring circuit connected to said second control circuit which receives said second control signal and records whether an LED is connected to said user controlled temperature adjustment circuit for each of said heat modes, wherein said monitoring circuit controls said controller to allow the operation of said heat mode upon detection of said LED associated with said heat mode and to prevent the operation of the heat mode in response to the absence of said LED.

7. (previously presented): A heating device temperature control apparatus according to claim 6, wherein said second control circuit comprises a Schmidt trigger operable to sense a voltage across said LED and output a signal indicative of whether said at

least one of said plurality of LEDs is connected to said user controlled temperature adjustment circuit.

8. (previously presented): A heating device temperature control apparatus according to claim 6, wherein said monitoring circuit comprises a skip latch operable to monitor said second control circuit and record whether at least one of said plurality of LEDs is connected to said user controlled temperature adjustment circuit.

9. (previously presented): A heating device temperature control apparatus according to claim 3, wherein the user controlled temperature adjustment circuit selectively operates using one of a plurality of switch modes.

10. (previously presented): A controller for a heating device for controllably applying power to a heating device and controlling the heating device temperature according to claim 9, wherein said switch modes comprise either a slide switch configuration or momentary pushbuttons.

11. (previously presented): A heating device temperature control apparatus according to claim 3, wherein the heating device temperature control apparatus is an ASIC.

12. (previously presented): A heating device temperature control apparatus according to claim 3, wherein the heating device comprises a heating pad.

13. (previously presented): A controller for a heating device for controllably applying power to a heating device and controlling the heating device temperature according to claim 2, further comprising:

a rapid heating control circuit constructed to control the switch means to energize said heating device for a predetermined time period upon activation of the controller by said user controlled temperature adjustment circuit to thereby rapidly increase the temperature of said heating device, whereby said rapid heating control circuit increases said signal on time by instructing said user controlled temperature adjustment circuit to vary the frequency of said frequency signal by varying an impedance included in said oscillator circuit.

14. (previously presented): A heating device temperature control apparatus according to claim 3, wherein the user controlled temperature adjustment circuit selectively operates using one of a plurality of switch modes.

15. (previously presented): A controller for a heating device for controllably applying power to a heating device and controlling the heating device temperature according to claim 14, wherein said switch modes comprise either a slide switch configuration or momentary pushbuttons.